

Guide for procurement of power station equipment —

Part 4-9: Boiler auxiliaries — Sootblowers

The European Standard EN 45510-4-9:1999 has the status of a
British Standard

ICS 27.060.30; 27.100

NO COPYING WITHOUT BSI PERMISSION EXCEPT AS PERMITTED BY COPYRIGHT LAW



Document Sharing Hub

National foreword

This British Standard is the English language version of EN 45510-4-9:1999.
The UK participation in its preparation was entrusted to Technical Committee E/-20, Power engineering steering committee, which has the responsibility to:

- aid enquirers to understand the text;
- present to the responsible European committee any enquiries on the interpretation, or proposals for change, and keep the UK interests informed;
- monitor related international and European developments and promulgate them in the UK.

A list of organizations represented on this committee can be obtained on request to its secretary.

Cross-references

The British Standards which implement international or European publications referred to in this document may be found in the BSI Standards Catalogue under the section entitled “International Standards Correspondence Index”, or by using the “Find” facility of the BSI Standards Electronic Catalogue.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

Summary of pages

This document comprises a front cover, an inside front cover, the EN title page, pages 2 to 24, an inside back cover and a back cover.

The BSI copyright notice displayed in this document indicates when the document was last issued.

This British Standard, having been prepared under the direction of the Engineering Sector Committee, was published under the authority of the Standards Committee and comes into effect on 15 January 2000

© BSI 01-2000

Amendments issued since publication

Amd. No.	Date	Comments

ISBN 0 580 35359 1

ICS

English version

**Guide for procurement of power station equipment - Part 4-9:
Boiler auxiliaries - Sootblowers**

Guide pour l'acquisition d'équipements destinés aux
centrales de production d'électricité - Partie 4-9: Auxiliaires
de chaudière - Système de ramonage

Leitfaden für die Beschaffung von Ausrüstungen für
Kraftwerke - Teil 4-9: Nebenanlagen - Rußbläser

This European Standard was approved by CEN/CENELEC on 1 October 1999.

CEN/CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN/CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN/CENELEC member into its own language and notified to the Central Secretariat has the same status as the official versions.

CEN/CENELEC members are the national standards bodies and national electrotechnical committees, respectively, of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.



CENELEC

	Contents	Page
Foreword		4
1 Scope		6
2 Normative references		6
3 Definitions		7
3.1 Organizational terms		7
3.2 Technical terms		7
3.3 General terms		8
4 Brief overall project description		8
4.1 Role and organization of purchaser		8
4.2 Site location		8
4.3 Equipment task		9
4.4 Equipment to be purchased		9
4.5 Control and instrumentation		9
4.6 Electrical supplies and other services		9
4.7 Other interfaces		10
4.8 Project programme		10
4.9 Equipment identification systems		10
5 Extent of supply		10
6 Terminal points		11
7 Operational requirements		11
7.1 Operating environment		11
7.2 Manning levels		11
7.3 Normal operation		11
7.4 Operating hours		12
7.5 Start-up and shut-down		12
7.6 Abnormal conditions		12
7.7 Further operational requirements		12
8 Life expectancy		12
8.1 Design life		12
8.2 Components requiring periodic maintenance		13
9 Performance requirements		13
9.1 Duty		13
9.2 Performance		13
9.3 Equipment margins		14
9.4 Availability		14
9.5 Levels of component redundancy		14
9.6 Further performance requirements		14
10 Design and fabrication		14
10.1 Specific equipment features		14
10.2 Design justification		16
10.3 Material selection		16
10.4 Safety		16
10.5 Interchangeability		17
10.6 Fabrication methods		17
11 Maintenance requirements		17
11.1 Planned maintenance		17
11.2 Personnel safety		17
11.3 Requirements for access		17

11.4	Lifting requirements.....	17
11.5	Special tools.....	17
11.6	Test equipment	17
11.7	Spare parts strategy	18
11.8	Special precautions.....	18
12	Technical documentation requirements	18
12.1	Tender documentation	18
12.2	Contract documentation	18
13	Applicable legislation, regulations, standards and further requirements.....	18
13.1	Legislation and regulations	18
13.2	Standards.....	19
13.3	Further requirements.....	19
14	Evaluation criteria	19
14.1	General	19
14.2	Technical criteria	19
15	Quality measures	20
15.1	General	20
15.2	Approvals procedure	20
15.3	Inspection requirements	20
15.4	Non-conformity	20
16	Site factors.....	21
16.1	Access.....	21
16.2	Facilities	21
16.3	Site specific requirements	21
17	Verification of specified performance.....	22
17.1	General	22
17.2	Works tests	22
17.3	Test during installation and commissioning	22
17.4	Technical conditions for trial run	22
17.5	Functional and performance tests.....	23
	Bibliography	24

Foreword

This European Standard has been prepared by Technical Committee CEN/CLC JTFPE, Joint Task Force Power Engineering, the Secretariat of which is held by BSI.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by April 2000, and conflicting national standards shall be withdrawn at the latest by April 2000.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

This standard takes the form of a recommendation and is therefore entitled a "Guide".

This Guide for procurement has been prepared under mandates given to CEN and CENELEC by the European Commission and the European Free Trade Association.

*This Guide for procurement is a part of a series of Guides mandated to cover the procurement of power station plant and **equipment** in conformity with European Procurement Directives. The Guides are:*

EN 45510 Guide for procurement of power station **equipment**

Part 1: Common clauses

Part 2-1: Electrical equipment - Power transformers

Part 2-2: Electrical equipment - Uninterruptible power supplies

Part 2-3: Electrical equipment - Stationary batteries and chargers

Part 2-4: Electrical equipment - High power static convertors

Part 2-5: Electrical equipment - Motors

Part 2-6: Electrical equipment - Generators

Part 2-7: Electrical equipment - Switchgear and control gear

Part 2-8: Electrical equipment - Power cables

Part 2-9: Electrical equipment - Cabling systems

Part 3-1: Boilers - Water tube boilers

Part 3-2: Boilers - Shell boilers

Part 3-3: Boilers - Boilers with fluidized bed firing

Part 4-1: Boiler auxiliaries - Equipment for reduction of dust emissions

Part 4-2: Boiler auxiliaries - Gas-air, steam-air and gas-gas heaters

Part 4-3: Boiler auxiliaries - Draught plant

Part 4-4: Boiler auxiliaries - Fuel preparation equipment

Part 4-5: Boiler auxiliaries - Coal handling and bulk storage plant

Part 4-6: Boiler auxiliaries - Flue gas desulfurization (De-SO_x) plant

Part 4-7: Boiler auxiliaries - Ash handling plant

Part 4-8: Boiler auxiliaries - Dust handling plant

Part 4-9: Boiler auxiliaries - Sootblowers

Part 4-10: Boiler auxiliaries - Flue gas denitrification (De-NO_x) plant

Part 5-1: Turbines - Steam turbines

Part 5-2: Turbines - Gas turbines

Part 5-3: Turbines - Wind turbines

Part 5-4: Turbines - Hydraulic turbines, storage pumps and pump-turbines

Part 6-1: Turbine auxiliaries - Deaerators

Part 6-2: Turbine auxiliaries - Feedwater heaters

Part 6-3: Turbine auxiliaries - Condenser plant

Part 6-4: Turbine auxiliaries - Pumps

Part 6-5: Turbine auxiliaries - Dry cooling systems

Part 6-6: Turbine auxiliaries - Wet and wet/dry cooling towers

Part 6-7: Turbine auxiliaries - Moisture separator reheaters

Part 6-8: Turbine auxiliaries - Cranes

Part 6-9: Turbine auxiliaries - Cooling water systems

Part 7-1: Pipework and valves - High pressure piping systems

Part 7-2: Pipework and valves - Boiler and high pressure piping valves

Part 8-1: Control and instrumentation

*EN 45510 part 1 contains those clauses common to all the above Guides giving the provisions of a non **equipment** specific nature for use in the procurement of power station plants. EN 45510 is the responsibility of JTFPE. The so called "common clauses", as appropriate, also appear in italics in the documents specific to particular **equipment**.*

In this Guide, words in bold type indicate that they have the meaning given in the definitions, clause 3.

In this Guide, words and sentences not in italics are specific to this Guide and refer to the particular **equipment** covered.

1 Scope

*This standard gives guidance on writing the technical **specification** for the procurement of **sootblower equipment** associated with steam generating plant for use in electricity generating stations (power stations). This Guide for procurement is not applicable to **equipment** for use in the nuclear reactor plant area of nuclear power stations. Other possible applications of such **equipment** have not been considered in the preparation of this Guide.*

This Guide covers mechanical (steam or air) and **acoustic sootblowers** for the following applications:

- furnace wall **sootblowers** and **water lances**;
- **long retractable** and **semi-retractable sootblowers**;
- **rotating element sootblowers** including **rake sootblowers**;
- airheater **sootblowers**.

*The **equipment** covered by this Guide is defined by its function rather than design type. Therefore, the guidance to the **specification** is stated in performance terms rather than being specified by a detailed description of the **equipment** to be supplied.*

*This Guide indicates to potential **purchasers** how their **specification** should be prepared so that:*

- the **equipment** type and capacity interfaces correctly with other elements of the systems ;
- predicted **performance** is achieved;
- ancillary equipment is properly sized;
- **reliability, availability** and safety requirements are achieved;
- proper consideration is given to the evaluation process and the quality measures to be applied.

*This Guide does not determine the type of **specification** (e.g. detailed, performance, functional) or the extent of supply for any given contract which is normally decided on the basis of the **purchaser's** project strategy. It does not cover:*

- any commercial, contractual or legal issues which are normally in separate parts of an **enquiry**;
- any allocation of responsibilities which are determined by the contract.

*This Guide does not prescribe the arrangement of the documents in the **enquiry**.*

*NOTE: As a comprehensive European environmental policy is still under preparation, this Guide does not address the environmental implications of the **equipment**.*

2 Normative references

This Guide for procurement incorporates by dated or undated reference, provisions from other publications. These normative references are cited in the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this Guide only when incorporated in it by amendment or revision. For undated references, the latest edition of the publication referred to applies.

EN ISO 9001	Quality systems - Model for quality assurance in design, development, production, installation and servicing (ISO 9001:1994).
EN ISO 9002	Quality systems - Model for quality assurance in production, installation and servicing (ISO 9002:1994).
IEC 60050-191	International electrotechnical vocabulary - Chapter 191: Dependability and quality of service.

3 Definitions

For the purposes of this Guide, the following definitions apply.

3.1 Organizational terms

3.1.1 purchaser: Recipient of a product and/or a service provided by a **supplier**.

3.1.2 supplier: Person or organization that provides a product and/or a service to the **purchaser**.

3.1.3 specification: Document stating technical requirements of the **purchaser**. It may form part of an **enquiry** issued by a **purchaser**.

3.1.4 enquiry: Invitation to **tender** issued by a **purchaser**. It will normally include a **specification** together with the necessary contractual and commercial conditions.

3.1.5 tender: Offer made by a **tenderer** in response to an **enquiry**.

3.1.6 tenderer: Person or organization submitting a **tender** for the **equipment** in response to the **enquiry**.

3.1.7 site: Place to which the **equipment** is to be delivered or where work is to be done by the **supplier**, together with so much of the area surrounding as the **supplier** may, with the consent of the **purchaser**, use for the purposes of the contract.

NOTE: Further definitions of useful organizational terms may be found in EN ISO 8402 (see Bibliography).

3.2 Technical terms

3.2.1 sootblower: Device which uses the impact of a jet of, steam, air or water, or sound energy (**acoustic sootblower**) to dislodge **deposits** from the internal surfaces of the boiler.

3.2.2 long retractable sootblower: **sootblower** which may be fully retracted from the boiler gas path when not in use. Rotation or part rotation is applied to give maximum tube coverage.

3.2.3 semi-retractable sootblower: Retractable **sootblower** part of which may remain in the gas stream when in the rest position without the need for cooling air. This device is also known as a helical or part retractable **sootblower**.

3.2.4 rake sootblower: **Sootblower** with multiple arms and nozzles which normally remains in the flue gas path without the need for cooling air when in the rest position. This device is also known as a traversing multi-jet **sootblower**.

3.2.5 wall sootblower: Short retractable **sootblower** with backward facing nozzles to clean the tubewall through which the device is retracted. This device is also known as a short retractable or deslagger **sootblower**.

3.2.6 rotating element sootblower: Non-retractable rotating **sootblower** with multiple nozzles which remains in the flue gas path without the need for cooling air.

3.2.7 water lance: Device for spraying water on to boiler tube work, usually in the furnace, to remove **deposits**. This device is also known as a water blower.

3.2.8 acoustic sootblower: Device which dislodges **deposits** from tubes by issuing noise at a predefined frequencies.

3.2.9 wall box: Sealing device attached to the boiler wall where the **sootblower** enters the gas stream which may be pressurized with air to minimize leakage.

3.2.10 sootblower coverage: Ratio of the effective area cleaned by **sootblowers** to the total area.

3.2.11 media utilization diagram: Plot of utilization of sootblowing media against time or position in the sootblowing sequence.